UNIVERSITY OF MINNESOTA
SEP 1947
AGRICULTURAL LIBRARY

The American FERTILIZER

A·A·C·O

ALL FERTILIZER MATERIALS

AMMONIUM NITRATE

SULPHATE of AMMONIA

ORGANIC AMMONIATES

SULPHUR

Foreign and Domestic

VEGETABLE OIL MEALS AND FEEDSTUFFS

Exclusive Distributors Duval Texas Sulphur

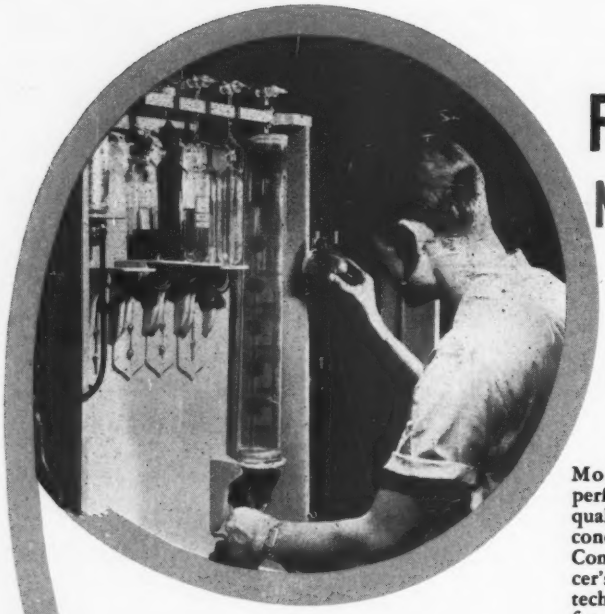
ASHCRAFT-WILKINSON CO.

Home Office
ATLANTA, GEORGIA

Branches
NORFOLK, VA.
CHARLESTON, S. C.
JACKSON, MISS.
TAMPA, FLA.

Cable Address
ASHCRAFT

Subsidiaries
INTERSTATE MILLS, INC.
CAIRO, ILL.
INTERSTATE WAREHOUSE
MOUNDS, ILL.



For HIGH ANALYSIS NITROGEN FERTILIZERS

Buy

SPENSOL
SPENCER NITROGEN SOLUTIONS

Modern facilities plus technical perfection by skilled chemists mean quality nitrogen solutions for well-conditioned, high analysis fertilizers. Constant analyses of SPENSOL (Spencer's Nitrogen Solutions) by trained technicians are your assurance of the finest in quality nitrogen solutions.

SPENSOL GIVES YOU FOUR BIG ADVANTAGES

1. MORE NITROGEN PER DOLLAR
The high nitrogen content of SPENSOL (Spencer's Nitrogen Solutions) makes it your best and most economical solution for efficient and more profitable mixing. (See chart below.)

2. HIGHER NITROGEN CONTENT
The high nitrogen content of SPENSOL makes possible the manufacture of high analysis nitrogen fertilizers.

3. EASIER MIXING
SPENSOL is easy to use and makes a well-conditioned, non-caking fertilizer that cures more quickly.

4. IMMEDIATE AVAILABILITY
SPENSOL is ready for shipment to you in tank car lots direct from Spencer Chemical Company's Jayhawk Works, centrally-located at Pittsburg, Kansas. Our technical advisory staff is at your service, without charge.

SPENCER

SPENCER CHEMICAL COMPANY

Executive and Sales Offices: **Dwight Building, Kansas City 6, Mo.**
Works: **Pittsburg, Kansas**

COMPOSITION OF SPENSOL (SPENCER NITROGEN SOLUTIONS)

	Ammonium Nitrate %	Anhydrous Ammonia %	Water %	Total Nitrogen %	Nitrate Nitrogen %	Ammonia Nitrogen %
SPENSOL A	65.0	21.7	13.3	40.6	11.36	29.24
SPENSOL B	55.5	26.0	18.5	40.8	9.62	31.18
SPENSOL C	66.8	16.6	16.6	37.0	11.65	25.35

• Manufacturers of HI-NITROGEN Fertilizer Products •

POTASH
TRONA
SALTS

MURIATE OF POTASH

To provide the maximum of this important plant food we are operating full capacity at Trona . . . 24 hours a day, 7 days a week.

THREE ELEPHANT

REG. U.S. PAT. OFF. REG. U.S. PAT. OFF.

Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops.

When Boron deficiencies are found, follow the recommendations of your local County Agent or State Experimental Stations.

AMERICAN POTASH & CHEMICAL CORPORATION

122 EAST 42nd STREET • • • NEW YORK CITY

231 S. LA SALLE STREET
CHICAGO 4, ILLINOIS

214 WALTON BUILDING
ATLANTA 3, GEORGIA

609 S. GRAND AVENUE
LOS ANGELES 14, CALIF.

"Pioneer Producers of Muriate in America"

D-3

YOUR BEST BILLBOARD··

Your Brand on a MENTE Bag!

GOOD MANAGEMENT USES TEXTILE BAGS!

The long useful life of burlap and cotton bags multiplies your sales messages. SOLD for reuse; CONVERTED into other farm and factory containers, MADE into useful household articles—they still talk about your brand.

FOR GOOD PACKAGES AND GOOD ADVERTISING
USE MENTE'S BURLAP AND COTTON BAGS!

MENTE & CO., INC.

I. T. Rhea, President and General Manager

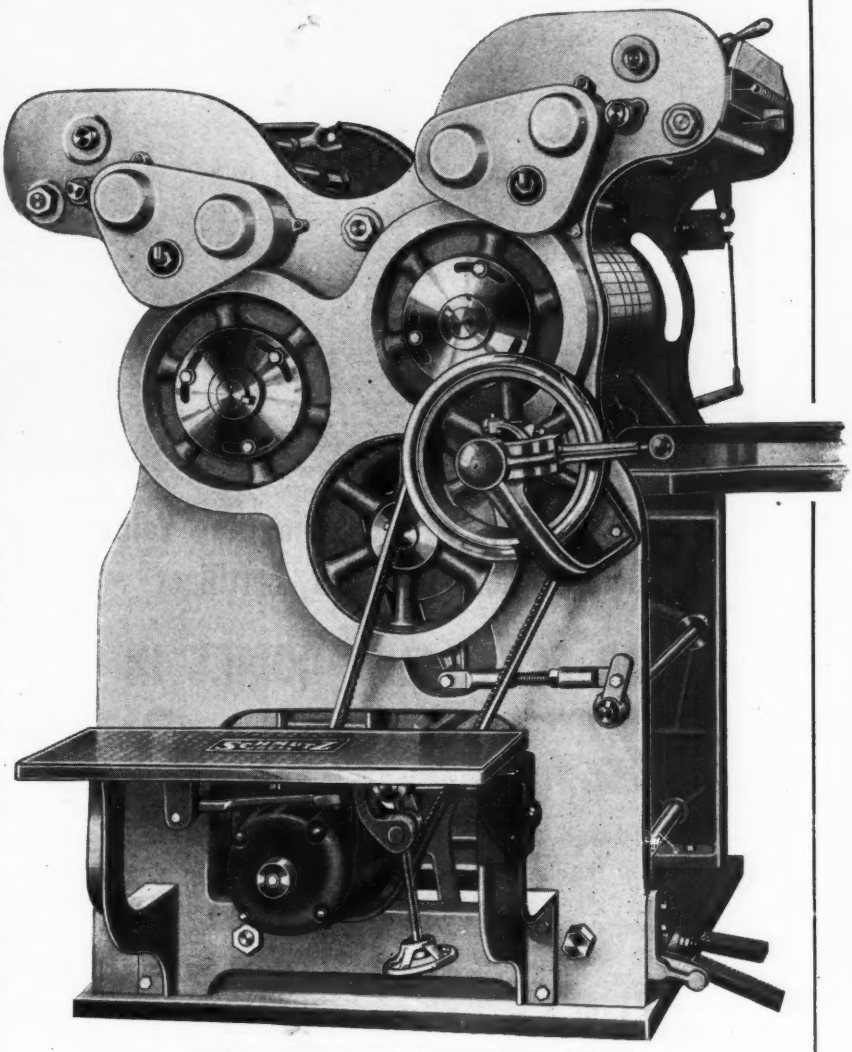
NEW ORLEANS HOUSTON SAVANNAH

print your FERTILIZER BAGS *more attractively*

This new Model Bag Printer will print any size or type of bag made of paper, burlap, cotton or paper-lined material. It is built in one, two and three colors.

The highest type of printing can be done with this machine at the lowest possible cost. It will also do an excellent job of printing on used bags.

We are in a position to make prompt delivery on printing plates also printing inks for the Fertilizer industry.



MANUFACTURED IN TWO AND THREE COLORS

SCHMUTZ
MFG. CO.
INCORPORATED
18th and Main Streets
Zone 3
Louisville, Ky.

CABLE ADDRESS "SCHMUTZ" ◆ LONG DISTANCE PHONE JACKSON 5219

Young Farmers Are Learning the Value of Soil Conservation and Fertilizer

GOOD FERTILIZER COMES IN

Fulton* QUALITY *Bags

Good fertilizers deserve good packaging. It's true that the beneficial effects of your fertilizer do not depend on the bags you use but why handicap a potent mixture with an unsightly package? Fulton's textile bags say to the user *"Here comes quality."*

Prompt shipments from our nearest factory.

FULTON BAG & COTTON MILLS

Manufacturers since 1870

Atlanta St. Louis Dallas Denver Minneapolis New York
New Orleans Kansas City, Kansas Phoenix, Arizona Winterhaven, Florida

The American FERTILIZER

Vol. 107 SEPTEMBER 6, 1947 No. 5

Coast Guard Committee Recommends Safety Precautions

Ammonium Nitrate Not Classed as an Explosive. Importance of This Fertilizer in Relief Program Emphasized

The special interagency committee appointed by the United States Coast Guard to study the problem of safe handling of ammonium nitrate in marine transportation has issued its first report, giving five recommendations which would increase the safety factor for such shipments. Two other reports will be made later, to cover, respectively, the dangers of land transportation of this material, and the results of chemical and physical tests on fertilizer grade ammonium nitrate.

The report approved the present classification of the material as being a dangerous material aboard vessels but did not specifically state that it should be classed as an explosive. In fact, the report states that "experiences and study indicate the explosive hazard of ammonium nitrate fertilizer in normal land transportation is negligible."

The committee's five recommendations were as follows:

1. The Coast Guard promulgate a requirement of regulation that vessels loading or unloading ammonium nitrate fertilizer cargo provide a fire watch.

2. The Coast Guard initiate suggested methods of preventing fires and extinguishment of fires on vessels having on board, or loading or unloading of ammonium nitrate.

3. As an interim measure of safety, the loading or unloading of ammonium nitrate fertilizer cargoes be done at facilities or anchorages designated by the Coast Guard.

4. Because Federal authorities and State authorities are constitutionally separate, municipal port authorities should secure the passage of local ordnances designed to prevent smoking at waterfront facilities and to set up authorized smoking areas in the vicinity of such facilities.

5. Since a virtual "no man's land" exists between Interstate Commerce Commission and Coast Guard regulations governing the transportation of dangerous articles by land and water, it would be appropriate for the Coast Guard to recommend certain suggested practices and safeguards as protection against fires and procedures for extinguishment of fire involving ammonium nitrate fertilizer stored in warehouses, on piers, wharves, and other waterfront facilities.

The report said further:

"The most common hazard to ammonium nitrate fertilizer in marine transportation is fire involving combustible containers or adjacent combustible material that may be present in the hold. On both the *SS Grandchamp* and the *SS Highflyer* fertilizer substance was contained in six-ply paper bags and was dunnaged with both wood and paper in the hold. Under such circumstances fire may be caused by, but not limited to, open flames, sparks, burning embers, live cigarettes, cigar butts, pipe ashes, oxyacetylene burning and welding, electrical ground and short circuits, contamination by or contact with substances capable of heating spontaneously and igniting, and other causes.

"The initiating cause of the fire on the *SS Grandchamp* is not determined, but the Coast Guard investigating board at Texas City was of the opinion that it was caused by the careless disposal of cigarette butts. The interagency committee accepts the findings of the Coast Guard board that smoking regulations were disregarded on the *SS Grandchamp* and therefore concurs that the primary cause of the disaster was the carelessness of men smoking.

"Samples of ammonium nitrate fertilizer from the *SS Grandchamp* were free from any contaminating materials. Abroad the *SS Highflyer*, on the other hand, the presence of sulphur dust, bulk sulphur in the hold adjacent to that of ammonium nitrate, and the possibility of burning or molten sulphur having found its way into the lower hold containing the ammonium nitrate cargo, leads the committee to accept the presence of sulphur as a contributing cause to the rapid decomposition of the fertilizer substance.

"This belief was later substantiated by laboratory tests of ammonium nitrate with a 10 per cent mechanical mixture of sulphur. These tests demonstrated conclusively the ability to completely detonate ammonium nitrate with sulphur as a contaminant. The exact minimum percentage of sulphur contaminant necessary for complete explosion has yet to be determined. Further tests will be continued inasmuch as sulphur is a common article of marine commerce.

"Extensive tests have shown that ammonium nitrate fertilizer will not heat spontaneously, it is not affected by friction or normal impact encountered in transportation, and in the absence of confinement and pressure of gases as products of fire it will consume all combustible material and the fire will then cease without explosion. Ammonium nitrate is a stable substance at temperatures below 200 degrees F. It is necessary to change its chemical stability in order to effectuate an explosion. Its chemical stability (of large quantities) can be altered by (1) fire under confinement in a compartment which lends itself to the retention of heat and the building up of pressure, and (2) contamination with sulphur or other substances and subsequent ignition by fire.

"The committee recognizes the above hazards in connection with ammonium nitrate fertilizer. But the committee also recognizes that there are hundreds of different substances possessing minor or major hazards moving in commerce every day. These substances are used for the preservation of life, safeguarding of health, compounding of medicines, heating, lighting, cooking, cleaning, transportation, preservation of foodstuffs and for other creature comforts. The economy of the nation is influenced to a considerable degree by substances having dangerous characteristics which form a part of normal life. And the number of these dangerous substances is likely to increase in years to come. To prohibit the handling and transportation of any dangerous article or to impose restrictions of such severity as to make its transportation economically impossible, would eliminate all hazard in connection therewith. Such procedure, however, would not be a practicable solution of the problem on hand.

"The committee agrees that the program of relief of devastated countries and the economy of the American farmer will be adversely affected if ammonium nitrate fertilizer is not utilized."

Koppers To Increase Sulphate of Ammonia Production

Two new developments by Koppers Co., Inc., of Pittsburgh, Pa., will add to the production of sulphate of ammonia. At its Kearny, N. J. Seaboard plant, a new sulphuric acid plant of 21,000 tons capacity is just beginning operations. A considerable portion of this output will be used in the production of sulphate of ammonia by the coke ovens at the Seaboard plant.

The Koppers Co. has also placed the contract for a battery of 63 coke ovens at its Midland, Pa., plant. The addition of two ammonium sulphate saturators will add to its output of this material. The new facilities will not be ready for operation until October, 1948.

Fertilize for Early Grazing

In order to get the full benefits from fall and winter grazing, it is necessary to fertilize well, according to the Georgia Experiment Station *Research News*. Unfertilized winter grazing produced over 60 per cent of its forage in spring and only 11 per cent in fall and winter. Heavy fertilization with 6–8–6 at seeding time and heavy nitrogen topdressing soon after the pasturage was up produced 38 per cent of the total season's grazing in early fall and winter. Early seeding, adequate fertilization, and nitrogen topdressing are musts for early fall and winter grazing.

The Influence of Soils & Soil Management Practices on Plant Food Requirements*

By W. V. BARTHOLOMEW[1]

(Continued from the issue of August 23, 1947)

The need for fertilization is reduced where types of farming are practiced which return most of the plant nutrients to the soil in the form of manure or crop residues. In a corn-oats-clover rotation producing on the average 50 bushels of corn, 50 bushels of oats and 2 tons of clover to the acre, about 65 pounds N, 24 pounds P_2O_5 and 62 pounds K_2O are taken up by the crop. If only the oat straw and corn stover are left on the land, about 53 pounds N, 18 pounds P_2O_5 and 34 pounds K_2O are removed each year from an acre of soil. Where all the crops are fed on the farm, however, and the manure returned to the land, only 20 pounds N, 7 pounds P_2O_5 and 8 pounds K_2O per acre are ultimately lost from the soil.

The use of animal manures not only reduces the total need for mineral fertilizer, but the extent of its use influences the desirable ratio of plant-food elements to add in the mineral supplements. The general composition of mixed manures has been given as 10 pounds of nitrogen, 5 pounds of phosphoric acid and 10 pounds of potash to the ton. This 2–1–2 ratio of the major plant-food elements is in marked contrast to the average 1–2–2, 1–3–2, or 1–4–2 ratios in mixed mineral fertilizers used in the United States. Where a large proportion of the plant food is applied to the soil in the form of animal manures, there is a need to increase the phosphorus ratio in the supplemental mineral fertilizer. This trend toward the use of higher phosphate ratios where manure is used extensively can be seen from the data in Table 4. It must be remembered, however, that the extensive use of manure in some of the regions is not the exclusive factor determining the ratios of plant food found in the mineral fertilizers. Natural soil fertility and current cropping practices also play an important part.

TABLE 4.
THE USE OF MANURE IN RELATION TO RATIO IN MINERAL FERTILIZER[1]

Region	Estimated Per cent of Plant Food Added as Manure	Ratio of Plant Food Added in Mineral Fertilizer		
		N	P_2O_5	K_2O
New England.....	52	1.0	1.8	2.0
Middle Atlantic....	67	1.0	2.9	2.1
East North Central.	80	1.0	6.3	4.2
South Atlantic.....	6	1.0	2.3	1.5

[1] *Fertilizers and Lime in the United States*, U.S.D.A. Misc. Pub. No. 586.

Tillage methods may affect fertilizer practice by influencing the release and availability to the crop of plant nutrients in the soil. The data in Table 5, obtained at the Ohio Agricultural Experiment Station[3], indicate the influence on potassium. In treatments No. 1 and 2, where plowing was practiced, the corn yields were highest and fertilized plots showed to little advantage. Where the tillage treatment was shallow, either by the use of broad sweeps or by disking, the crop without fertilization showed symptoms of marked and severe potassium deficiency. In contrast, no potash deficiency symptoms were found on the plowed plots.

An Evaluation of Present Practices

Are the plant-food requirements of specific farms, of soil areas, or of the nation as a whole supplied by the present practices in soil fertility control? To what level of fertility are

[1] Soil Scientist, Division of Soils, Fertilizers and Irrigation, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture, Beltsville, Maryland.

* A paper presented at the Beltsville Fertilizer Conference, January, 1947.

[3] J. B. Page, C. J. Willard and G. W. McCuen. 1946. "Progress Report on Tillage Methods in Preparing Land for Corn." Agronomy Monograph No. 102, Ohio Agr. Expt. Sta.

(Continued on page 24)

THE AMERICAN FERTILIZER
ESTABLISHED 1894
PUBLISHED EVERY OTHER SATURDAY BY
WARE BROS. COMPANY
1900 CHESTNUT ST., PHILADELPHIA 3, PA.

A Magazine international in scope and circulation devoted exclusively to the Commercial Fertilizer Industry and its Allied Industries

PIONEER JOURNAL OF THE FERTILIZER INDUSTRY

A. A. WARE, Editor
C. A. WHITTLE, Associate Editor
K. F. WARE Advertising Manager

E. A. HUNTER, Southern Advertising Manager
2246 E. Lake Road, N. E.,
Atlanta, Ga.

MID-WESTERN OFFICE
NEDOM L. ANGIER JR.
111 W. Jackson Boulevard
Chicago 4, Ill.
Telephone—Wabash 6-9705

ANNUAL SUBSCRIPTION RATES

U. S. and its possessions, also Cuba and Panama	$3 00
Canada and Mexico	4 00
Other Foreign Countries	5 00
Single Copy	.25
Back Numbers	.50

THE AMERICAN FERTILIZER is not necessarily in accord with opinions expressed in contributed articles that appear in its columns. Copyright, 1947, by Ware Bros. Company.

Vol. 107 SEPTEMBER 6, 1947 No. 5

Principal Articles in This Issue

PAGE

COAST GUARD COMMITTEE RECOMMENDS SAFETY PRECAUTIONS 7

THE INFLUENCE OF SOILS AND SOIL MANAGEMENT PRACTICES ON PLANT FOOD REQUIREMENTS—*by W. V. Bartholomew* 9

Anticipated Crop Returns as Basis of Fertilizer Investment 10

Ware Says Food Shortages Hamper European Recovery 11

More Nitrogen and Thicker Spacing Doubles and Triples Corn Yields 12

FERTILIZER MATERIALS MARKET:
New York 13
Philadelphia 14
Charleston 14
Chicago 15

St. Regis' New Valve Bag Filling Machine 18

Anticipated Crop Returns as Basis of Fertilizer Investment

An educational institution has proposed as a rule for buying fertilizers that one-tenth of the anticipated value of the crop to be grown be spent for fertilizers.

One difficulty in applying such a rule is in appraising the value of a crop months in advance of harvest. All the information about world production, stocks on hand, and intentions to plant—valuable as they are in determining the outlook—fails to include other factors that may determine yields. Weather, for instance, may be ideal in some areas and disastrous in others. Market values may be abruptly changed by the variation in the demand due to the degree of activity of industry and business.

Under the 10 per cent rule, the pessimist would never buy as much fertilizers as he could profitably use. The optimist, on the other hand, would buy more than the pessimist, but err less, for the 10 per cent rule is conservative in the first place.

When crop prices are low, would it be economically sound to decrease the application of fertilizers proportionately? Not if the greatest possible economy in production is to be attained, and this is certainly required when prices are low.

Highest efficiency is reached only when yields per acre are high, whether prices are high or low. A margin of profit, after costs are deducted, will be less when crop prices are high than when low, but that margin is more vital to the farmer when prices are low. In a word, high acre yields are necessary when crop prices are low to have any margin of profit at all.

Returns per dollar invested in fertilizers normally means increased crop yields worth $3.00 to $5.00, and in many instances more. Though prices of crops may be low, the return on the investment in fertilizers is still very substantial.

The anticipated value of a crop as a basis for estimating the amount of fertilizers to apply, if followed, would mean the use of more fertilizers than farmers generally apply, and, therefore, more adequate feeding of the crops than is generally practiced.

But better still, if a farmer will take the trouble to find out what kind of fertilizer and the quantity to use on his soil and for his various crops for the most profitable returns, he has a formula that will be best whether crop prices are high or low. To cut down on

the diet of crops, because of low prices, not only reduces crop yields but reduces labor returns of the farmer in growing the crops, and this, too, at a time when returns are greatly needed by the farmer.

Maine Fertilizer Plant Burns

The fertilizer plant of A. W. Higgins Co., Presque Isle, Me., was destroyed by fire during the night of August 26th. The loss was estimated at $150,000.

Armour Planning New Concentrated Superphosphate Plant

Armour Fertilizer Works is making preparations for the construction of a triple superphosphate plant about one mile from Bartow, Fla. While no date has been set for the start of construction work, according to W. F. Eger, local Armour representative, plans call for a plant and installation to involve an investment of $4,000,000. The company owns a phosphate rock deposit near Bartow, known as the Morris Mine, which was operated some years prior to 1924, when it was closed down. It is not known, however, whether this mine will be reopened to supply material for the new plant.

Cottonseed Production Drops

The cottonseed crush during the crop year ended July 31, 1947, was 3,088,335 tons, a moderate drop from the 3,261,915 tons crushed during 1945–1946. Production of cottonseed cake and meal amounted to 1,361,668 tons, compared with 1,434,326 tons during the previous crop year. Mississippi, Texas, Georgia, Alabama and Louisiana showed the biggest decline in output, while increases were recorded in Arkansas, Tennessee, California and South Carolina.

Phosphate Rock Production Makes New Record in 1946

A total production of 7,168,839 long tons of phosphate rock was mined in the United States during 1946, according to figures released by the U. S. Bureau of Mines. This is an increase of almost one-third over the 1945 output of 5,399,739 tons. In both years the average P_2O_5 content ran about 32 per cent.

The distribution of production was as follows: Florida, 5,280,402 tons; Tennessee, 1,316,107 tons; Western States, 572,330 tons.

Sales during the year totaled 6,860,713 tons, of which 67 per cent was used in superphosphate production; 13 per cent in the chemical phosphorus and phosphates industry; 8 per cent for direct application to the soil; 1 per cent as fertilizer filler; 1 per cent in poultry and cattle feed; 10 per cent for export.

The higher grades of rock made up the bulk of production, 78 per cent of the output analyzing 70 per cent B.P.L. or better.

Ware Says Food Shortages Hamper European Recovery

Although the nations of western Europe are making some progress toward recovery from the war, all are hampered in the production of food by shortage of phosphate, according to Louis Ware, president of International Minerals and Chemical Corporation.

Mr. Ware, who has just returned from a business trip through five European countries, declared the primary needs of Europe are coal and food. Coal, he said, is needed for transportation and phosphate is essential to the production of food.

The United States, with half of this year's estimated world phosphate production, he added, is currently exporting as much phosphate as in 1939 when one million tons were sold outside the country. Mr. Ware estimated the 7 million tons of phosphate expected to be produced in this country in 1947 will be about twice the amount of normal annual pre-war production.

After visiting Sweden, Norway, Denmark, England, and France, Mr. Ware said he found all are making steady but slow progress. The Scandinavian countries are showing the best progress with their citizens hard-working, happy, and prosperous. All, he added, are cognizant of the needs for increased agricultural production.

The problems in supplying the phosphate needs of Europe, he pointed out, include lack of transportation, high shipping rates, and the lack of labor and equipment on European farms. The use of phosphate in the United States is still increasing with present consumption almost double that of 1939. In view of the greater demand, International Minerals and Chemical Corporation has a new phosphate plant under construction in Florida with an annual capacity of 1,000,000 tons which is expected to be in operation next January.

More Nitrogen and Thicker Spacing Doubles and Triples Corn Yields

Mississippi Farm Research, a monthly publication of the Mississippi Agricultural Experiment Station, reports on corn tests that "the highest yields were obtained in all cases with the heaviest application of nitrogen and stands of 8,000 to 12,000 plants per acre. Yields were raised above 70 bushels per acre in two experiments and to 60 bushels or more in these others."

In the 1946 experiment, the nitrogen application was raised to 120 pounds per acre as a maximum, of which 30 pounds were applied at planting time and the remainder as side-dressing when the corn was knee high. Phosphate and potash rates were raised to 80 pounds each, and stands were adjusted at 4,000, 8,000 and 12,000 per acre.

At all points, except one where conditions were unfavorable, there was an increase in yield of about one bushel of corn for each two pounds of nitrogen as fertilizer. "An exchange of two pounds of nitrogen fertilizer for one bushel of corn presents an attractive prospect," the report states.

Size of Ears

"In these experiments" the report says, "it was found that increasing the number of plants without sufficient nitrogen, reduced the size of the ears, but when nitrogen and stand rates were raised at the same time, the ears were at least as large as those produced by the usual farm practices."

Except on most fertile soils, according to the report, "more plants than usual should not be grown unless high rates of nitrogen are used," adding: "Even with 30 or 40 pounds of nitrogen per acre, when the stand was increased above that usually left in the field, the yield usually went down. It was only with 60, 90, and 120 pound rates of nitrogen that the heavier stands were profitable.

"The work to date indicates 90 pounds of nitrogen and 10,000 plants per acre are a satisfactory combination. About one-third of this nitrogen should be applied at planting time, and the remainder when the corn is knee high."

Weed control early in the season and avoidance of deep or late cultivation are advised.

As to the effect of the fertilizers on weed growth, the report says:

"As an added advantage, it was found that there was less grass and weed growth in the well-fertilized heavy stands than in the usual stands, and less cultivation was needed."

By greatly increasing both the amount of nitrogen and the number of corn plants "the average yield in Mississippi might readily be trebled or raised even higher."

Radioactive Phosphorus To Be Discussed at Dinner Meeting

Chairman V. Sauchelli of the Phosphate Research Committee has announced a dinner meeting of the committee to be held at the Hotel New Yorker, New York City, on the evening of September 16th. The purpose is to make a progress report of the past year's research on radioactive phosphorus as applied to agriculture and to present a program for future research. This meeting is being held at the time of the annual meetings of the Fertilizer Division of the American Chemical Society.

Because of the important contributions which this new scientific tool, radioactive phosphorus, can make to the more efficient utilization of fertilizer in the growing of crops and the feeding of animals, members of the fertilizer industry who have contributed to the committee's research fund and all others of the industry who are interested are urged to be present.

Fertilizer Makes Oats Hardy

Winter-hardiness of oats as well as other small grains can be increased through the use of superphosphate, according to C. F. Lund, farm management specialist of the University of Arkansas College of Agriculture. Oats fertilized in the fall with superphosphate, where needed, will stand several degrees lower temperature and will mature earlier in the spring. Higher yields also are possible. Highly productive soils do not require fall fertilization unless increased pasture is desired.

For grain or hay, the use of 300 pounds per acre of superphosphate on soils of medium productivity and 300 pounds per acre of 4–16–0 or 3–12–6 on soils of low productivity is recommended. For grazing, 300 pounds of 4–16–0 or 4–12–4 per acre is desirable.

At the Main Experiment Station at Fayetteville, Ark., the use of 200 pounds of superphosphate and 20 pounds of nitrogen resulted in 14.1 bushels more oats per acre than where the nitrogen was used without the phosphate, Mr. Lund said.

FERTILIZER MATERIALS MARKET

NEW YORK

Absence of Spot Material Slows Trading Activity. Buyers Try to Advance Contract Shipments. Sulphate of Ammonia Prices Still Vary. No Supplies of Any Material Accumulating at Producers' Plants

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, September 2, 1947.

The summer lull is continuing over Labor Day so far as trading in spot materials is concerned, principally because there are no such materials available for purchase. The principal materials such as superphosphate, sulphate of ammonia, nitrogen solutions, potash, etc., have already been contracted for to the limit of probable production. Fertilizer mixers apparently expect the trend for early buying of fertilizers to increase this year, as they are trying to get their shipments of materials advanced on the schedule so that the October quota can be delivered in September. As most shipments are being made direct from current production, there is little chance of the requests being granted.

Sulphate of Ammonia

The relatively wide range of sulphate of ammonia prices continues, reported prices running from $32.00 to $38.00 per ton, f.o.b. producing ovens, with $35.00 the most popular price for current contracts. The figures show shipments and production tonnages about even, with very small stocks on hand at producing plants.

Nitrate of Soda

The recent advance of $4.00 per ton in the price of Chilean nitrate of soda has not slowed up the demand for future shipments. The expected increase on domestic nitrate has not been announced as yet.

Organic Material

With tankage quoted at $8.75 ($10.63 per unit N), dried blood at $7.50 ($9.12 per unit N), fish scrap at $115 to $130 per ton, the organics market is solely a feed market Certain fertilizer organics such as castor meal (quoted at $40.00 per ton) are still within fertilizer range but have been heavily contracted for to the limit of present production.

Phosphate Rock

The supply situation has not eased to any extent. Contract shipments are still being made from current production with no reserves accumulating at the mines. The recent advance in prices has had no effect on the continuing demand. North African phosphate production increased more than 50 per cent in 1946 and it is expected that continued improvement in this direction will relieve the demand for export material and release greater quantities for home consumption.

Superphosphate

Production is continuing at peak figures but the current demand is taking all that can be manufactured. Many acidulators are sold up for the current fertilizer year and have had to turn down additional orders. The output of the concentrated grades has increased greatly and now forms about 10 per cent of total P_2O_5 production.

Potash

Producers continue to manufacture to the limit of mining and refining facilities. Practically the entire year's output is on contract and the companies are having to turn down orders for increased quotas. Shipments have kept pretty well to schedule with the transportation situation showing improvement, for the present, at least.

PHILADELPHIA

Little Interest in Spot Materials. Mixers Not Frightened by Ammonium Nitrate Hazards. Old Phosphate Mine Reopened

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, September 2, 1947.

The market is rather quiet with practically no demand for prompt materials, but there is still keen interest in fertilizer chemicals for future. Inquiries have been fairly numerous for organics, but mixers are holding back to see whether the selling price of complete mixtures will warrant paying the price for organics.

Sulphate of Ammonia.—Prices remain within the same spread as previously reported, with shipments moving on contracts and no unsolicited offerings. Higher production costs would seem to justify further price increase.

Nitrate of Soda.—The recent price advance of Chilean nitrate has not slackened the demand for futures, and substantial inquiry is reported. Domestic production is said to go mostly to the chemical trade.

Nitrate of Ammonia.—While interests outside the fertilizer industry are quite disturbed over the possible danger involved in handling and storing this product, the numerous inquiries recently from fertilizer mixers in all parts of the country would indicate that only a few of them have any fear. Meanwhile authorities are busy preparing regulations and restrictions under which movement of this material may continue. No general offerings of fertilizer grade are reported.

Castor Pomace.—Production is said to be limited, and shipments are moving against contracts.

Blood, Tankage, Bone.—Blood sold at $7.50 per unit of ammonia ($9.12 per unit N) with offerings light. Dry rendered tankage is quoted at $2.20 per unit of protein ($13.75 per unit N), which is, of course, a feeding proposition entirely. Other offerings of tankage, as such, were quoted at $8.25 to $8.75 per unit of ammonia ($10.02 to $10.63 per unit N). Bone meal was quoted variously from $59.00 to $68.00 per ton, depending upon the grade.

Fish Scrap.—Slight interest was shown in meal by the feeding trade, with no price change.

Phosphate Rock.—Demand is still active with shipments continuing directly from production. One fertilizer manufacturer is planning on opening a mine in Florida that was closed over twenty years ago, and is reported ready to build a superphosphate production plant nearby.

Superphosphate.—Market remains steady with producers still showing little interest in new business. Shipments continue to move on contracts.

Potash.—Market supply position continues tight, with shipments direct from production, and demand well ahead of supply.

CHARLESTON

Little Change in Material Situation. Demand Strong for All Materials. Price Advance on Nitrate of Soda

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, August 30, 1947.

Organics.—The market continues firm, with few offers.

Domestic Nitrogenous.—Recently quoted by one Western producer at $6.50 per unit of ammonia ($7.90 per unit N) f.o.b. Midwestern point. Is not now being offered until the seller obtains additional raw material.

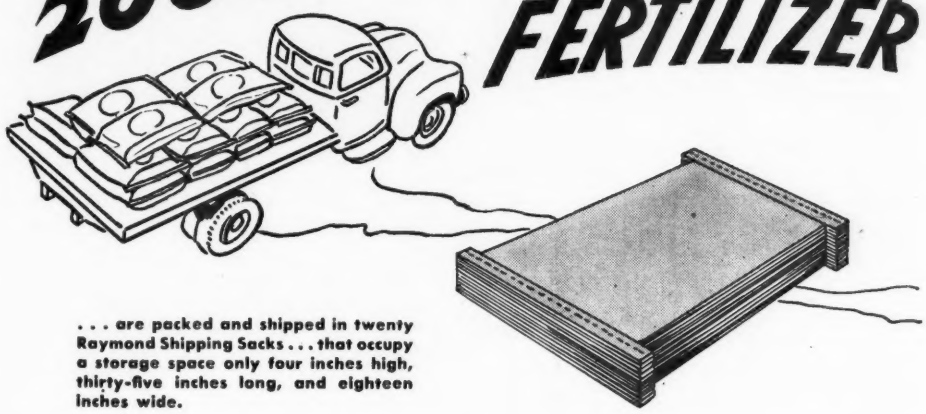
Castor Pomace.—The situation on this is not changed. Only shipments being made are those against contracts.

Potash.—Nothing being offered, with an insistent demand.

PULVERIZED
MASCOT
LIMESTONE
Trade Mark Registered

MAGNESIUM LIMESTONE
"It's a Dolomite"
American Limestone Company
Knoxville, Tenn.

2000 lbs. of FERTILIZER



. . . are packed and shipped in twenty Raymond Shipping Sacks . . . that occupy a storage space only four inches high, thirty-five inches long, and eighteen inches wide.

Storage space is an important consideration to the producer, packer, and shipper of fertilizer.

If you're a producer, packer, or shipper of fertilizer, you will appreciate the small space required to store Raymond Multi-Wall Paper Shipping Sacks—and this is only one of their many advantages. They're easy to handle, easy to stack and pack, and offer perfect protection from packer to user. Printed in brilliant, fade-proof inks, they give your product eye-appeal. Investigate Raymond Shipping Sacks today. They are CUSTOM BUILT in a size, type, and strength to meet your special requirements. They are available now.

THE RAYMOND BAG COMPANY
Middletown, Ohio

CUSTOM BUILT

RAYMOND Multi-Wall paper Shipping Sacks

Nitrate of Soda.—The price on this has advanced $4.00 per ton, but no definite information out yet as to allotments for the coming season.

Ammonium Nitrate.—Demand very strong. Manufacturers in the Southeast experiencing difficulty getting any offers.

Dried Ground Blood.—Little being offered, the price ranging around $7.50 to $8.00 per unit of ammonia ($9.12 to $9.72 per unit N), Chicago.

Superphosphate.—Especially scarce in the Southeast with demand that cannot be filled at the moment.

CHICAGO

No Fertilizer Tankage Expected on Market for Some Time. Demand Strong for Feed Materials

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, August 30, 1947.

The organic fertilizer market remains dull, without interest being noticeably displayed by either buyers or sellers. No fertilizer tankage has appeared on the market and, as sellers predicted some time ago, there would probably be none offered on the market this season.

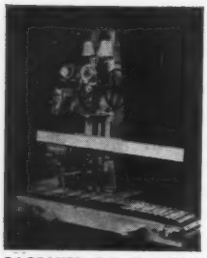
A strong demand for feed continues and nothing is offered on the open market by the large packers, their production going to regular customers on an allocation basis.

Traffic Department Appointments by Chilean Nitrate

James F. Doetsch, president of the Chilean Nitrate Sales Corporation, has announced the appointment of J. Hinton Graves, Jr., as general traffic manager, and of John M. Wallach as assistant traffic manager.

Graves, a veteran of the merchant marine in which he served for sixteen years, was appointed assistant traffic manager Feb. 1, 1939. Three years later he was commissioned a lieutenant in the U. S. Navy and held the rank of commander at the time of his discharge in March, 1946.

Wallach joined the traffic department in November, 1939, and was commissioned an ensign in the Navy in 1943. He was assigned to the Naval Transportation Service and was discharged a lieutenant (j.g.) in April, 1946.



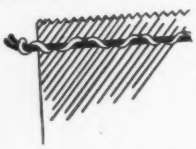
BAGPAKER E-1 (Portable). Working with filled bags, one operator can close up to 15 bags per minute. A single foot pedal controls both conveyor and sewing head.

cut fertilizer packaging costs!

Cut packaging time and operating costs . . . sell fertilizer packaged the way farmers prefer—by using a Bagpaker E-1 (illustrated). All Bagpakers sew a "cushion-stitch" closure that's the strongest part of the open-mouth multiwall paper bag—yet the bag opens easily and quickly. Write Bagpak for details.

BAGPAK INC

INTERNATIONAL PAPER PRODUCTS DIVISION
INTERNATIONAL PAPER COMPANY
220 E. 42nd St., N. Y. 17, N. Y.
Branch Offices: Chicago, Boston, Pittsburgh, Philadelphia, Cleveland St. Louis, Atlanta, Camden, Ark., Baltimore, Syracuse, New Orleans.
In Canada: Continental Paper Products, Ltd., Montreal, Ottawa.

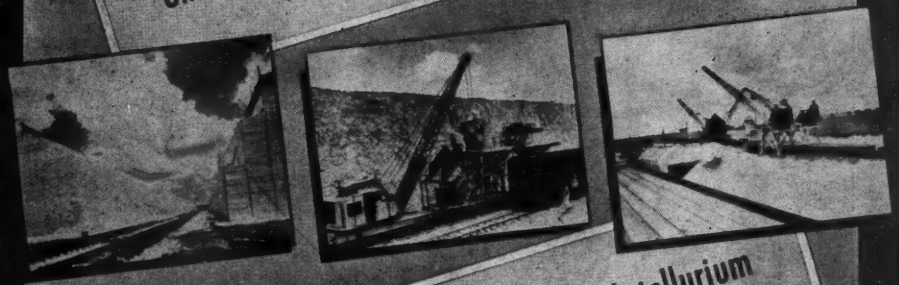


Here's a tough, safe bag closure— and it's easy to open!

SULPHUR

Large stocks carried at all times, permitting prompt shipments

Uniformly high purity of 99½% or better



Free of arsenic, selenium and tellurium

TEXAS GULF SULPHUR CO.
INC.
75 E. 45th Street New York 17, N.Y.
Mine: Newgulf, Texas

St. Regis' Newest Valve Bag Filling Machine

Confronted several years ago with demands by both large and small manufacturers for a low-cost machine which would give them the advantages of mechanized industrial packaging in multiwall paper bags, engineers of the St. Regis Paper Company set to work to design equipment to fill the need.

In 1944 the job was completed, and the first of these new machines—designated the 100-LS valve bag filling machine—went into commercial operation. Today, more than 100 units are in use in the chemical, food, and feed industries, according to R. P. Bushman, vice-president of the St. Regis Sales Corporation. He added that more than 30 machines are on order for immediate delivery.

St. Regis 100-LS Valve Bag Filling Machine

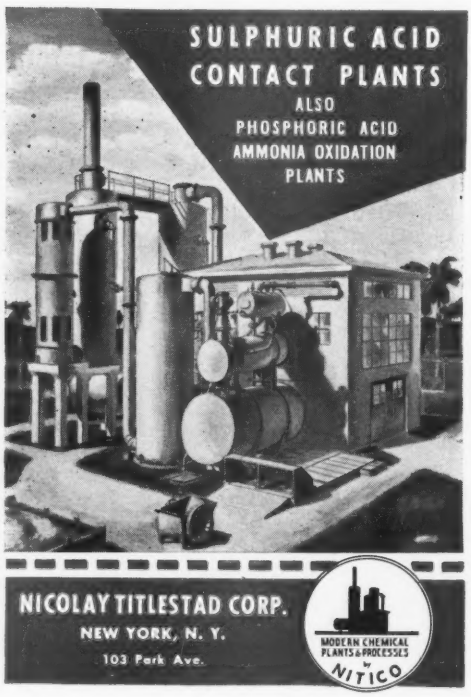
"This record clearly shows how successfully this inexpensive, widely adaptable machine has met the requirements for which it was designed," he said.

The 100-LS machine is now used for the packaging of more than 30 industrial products. In eliminating the use of fibre drums, fabric bags, steel drums and other containers, this versatile machine is used to package various commodities in both large and small operations. It not only speeds up packaging operations, but at the same time cuts down container costs through the use of multiwall paper bags, Mr. Bushman said. In addition, labor costs are substantially reduced.

The mechanized packaging operation made possible by the 100-LS packer and paper valve bags eliminates the dusty packaging as well as the slower closing methods. Valve bags are factory-closed at both ends and a small opening or valve is left in one corner. It is through this valve that the bag is filled. The weight of the contents of the bag automatically closes the valve at the end of the filling operation, thereby eliminating hand-closing methods. A special device on the bag filling machine "settles" the contents during the filling operation.

Mr. Bushman pointed out that many manufacturers, carrying their mechanized packaging a step further, have installed conveyor systems to handle the steady flow of filled bags. In other instances, labor-saving fork lift trucks have been added to the plant's equipment to transport the neat palletized loads of filled bags. In many cases, such handling equipment was impractical when using other containers.

With the 100-LS packer, which is designed to handle charges up to 100 pounds, two



HIGH FERTILITY

High fertility in both lands and stock is the cornerstone of this country's agricultural wealth.

In large part such fertility depends—either directly or indirectly—upon the sound and adequate use of fertilizers. Many of the most efficient of these fertilizers are compounded with Potash, the vital soil nutrient that increases fertility and guards against disease and drought.

Sunshine State Potash is contributing most importantly to the continued high fertility of America's fields and flocks.

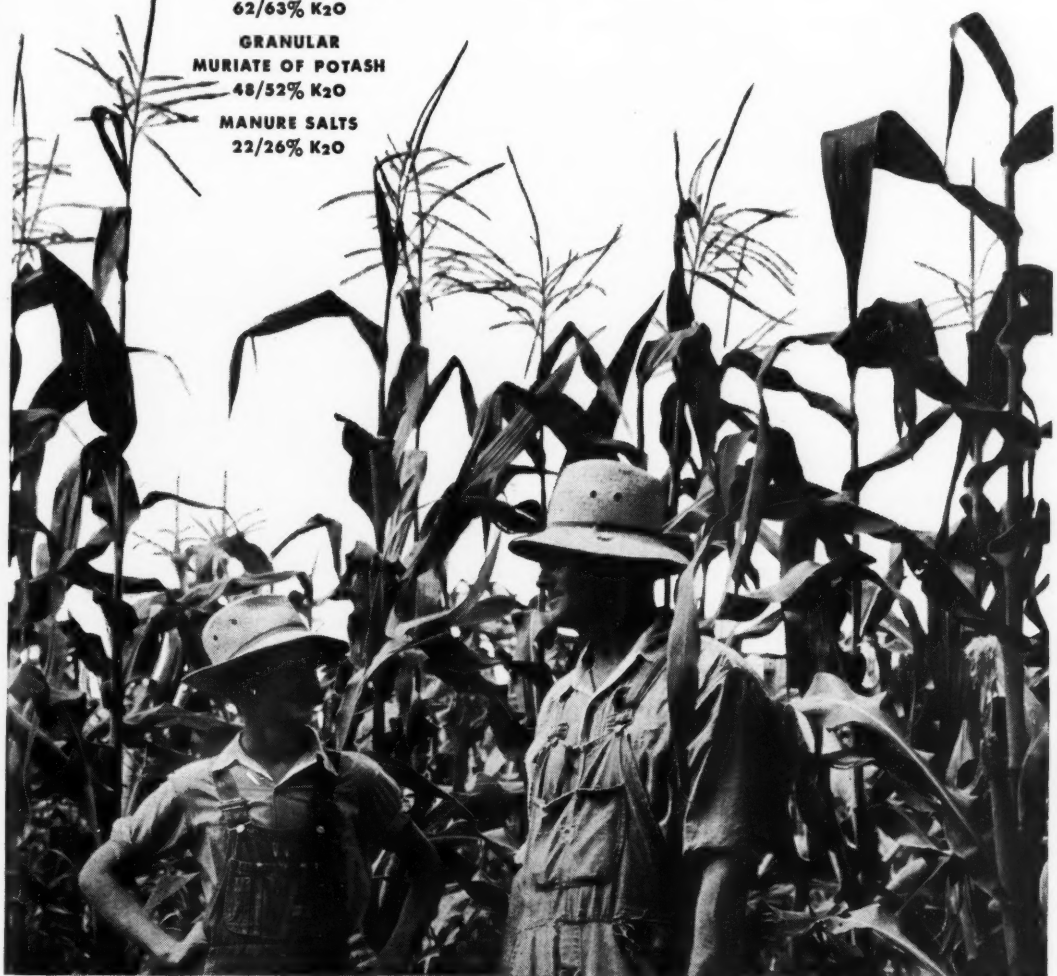
SUNSHINE STATE POTASH
A PRODUCT OF NEW MEXICO U.S.A.

Reg. U. S. Pat. Off.

HIGRADE
MURIATE OF POTASH
62/63% K_2O

GRANULAR
MURIATE OF POTASH
48/52% K_2O

MANURE SALTS
22/26% K_2O



UNITED STATES POTASH COMPANY, *Incorporated*, 30 Rockefeller Plaza, New York 20, N. Y.

methods are used to insure proper weights. In the first, the machine is placed on a platform scale which weighs the material and automatically cuts off the flow when the correct weight is reached. In the second method, the flow of material is adjusted to a predetermined speed and then cut off by a timing device at the proper amount.

By various combinations of these arrangements, seven types of installations can be made, thus giving the machine its notable flexibility for the packaging of many different materials at low cost.

"The outstanding merits of the machine," Mr. Bushman explained, "are its simplicity of operation, its low cost, and its flexibility of application to meet the exact needs of each user."

Dry Weather and Phosphate

Six weeks without rain is tough on crops and pastures, but in Rains County, Texas, the drought is proving another point for phosphate fertilizer.

Demonstration plots on truck farms, some treated with phosphate and some not, are "noticeable at a distance of 600 yards," says Rains County Agent Frank Miears. The phosphated crops have definitely stood the dry weather better than the non-fertilizer plots.

On pastures, too, says the county agent, the phosphate is helping to tide stockmen over during the drought. Calvin Jaggers, Waskom community stockman and Texas A. and M. College Extension Service farm unit demonstrator, has half his acreage of lespedeza and Bermuda grass phosphated. The fertilized acreage is in twice as good shape as the non-fertilized, says Miears.

Pasture land with no phosphate is completely burned, the county agent says, and is furnishing little grazing. The phosphated pastures are still carrying one cow on every five acres.

Link-Belt Announces Sales Management Changes at Chicago and Minneapolis

Link-Belt Company has announced the following changes in sales management personnel:

James B. Elliott, heretofore divisional manager for Caldwell plant products, with headquarters at the Caldwell plant in Chicago, has been appointed divisional sales manager at the company's plant in Minneapolis, Minn. Mr. Elliott, a native of Superior, Wis., joined Link-Belt in 1925 and is well acquainted in Minneapolis plant territory, having formerly served as district sales engineer for Minnesota, Wisconsin and the upper peninsula of Michigan.

Erwin A. Wendell, heretofore district sales manager, Chicago branch, with headquarters at the Pershing Road plant, has been appointed divisional sales manager for Caldwell plant products, with headquarters at the Caldwell plant. Mr. Wendell entered the employ of the Link-Belt Pershing Road plant engineering department in 1918. Among various positions held, he also served as district sales manager at St. Louis from 1937 to 1944.

T. W. Matchett, heretofore district sales engineer at New York, has been appointed district sales manager, Chicago branch, with headquarters at the Pershing Road plant. Mr. Matchett, a mechanical engineering graduate of Lehigh University, 1931, joined the Link-Belt sales department in Chicago early last year after 13 years' experience in the shop, erection, engineering and sales departments of a well-known eastern conveyor manufacturer. At time of leaving, he was secretary of the company.

• Link-Belt screens prove their superior performance, high efficiency and low operating cost on the job . . . for example, at the plant illustrated above, the first 4 screens were so satisfactory 4 more were added for washing phosphate rock.

Link-Belt screens are made in all standard sizes, and in various standard types.

LINK-BELT COMPANY
2045 W. Hunting Park Ave., Philadelphia 40.
Offices and distributors in all principal cities. 10,607

BEMIS MINUTE MOVIES
for Shippers who want to save time and money
"Ferdinand Fertilizer Wins Top Money"
Scenario: Ferdinand Fertilizer is a high-class fellow...a skilled workman. He's a "special fertilizer" employed by gardeners, nurseries, golf courses, etc. This important fellow must arrive at work in tip-top condition. If Ferdinand allows his clothes to become torn or soaked with rain, he's ruined. He looks and looks for the right clothes to wear, and then...
Happy Ending: Success! Ferdinand Fertilizer now dresses up and keeps in perfect condition in Bemis Waterproof Laminated Textile Bags. (They're mighty economical too for such smart appearance and the protection they give.) Ferdinand commands top money . . . is in wide demand . . . and everybody's happy now.
BEMIS Waterproof BAGS

PRE-TESTS STOP PROTESTS! Bemis Waterproof Laminated Textile Bags head off complaints because they are tested *before* they are put to work. Their strength and tear-resistant, puncture-resistant qualities are pre-proved for you. And their economy is attested by scores of users.

This Bemis Waterproof Bag is light in weight, yet is the strongest shipping bag made. It assures low-cost protection against sifting, breakage, caking, escape of odors, and many other common shipping complaints. Empty or filled, it saves storage space.

Your special fertilizers packed in Bemis Waterproof Bags command top prices — and bring you repeat business.

Write today for a copy of "Seven Facts About Low-Cost Protective Packaging"

BEMIS BRO. BAG CO.
WATERPROOF DEPARTMENT
408-N PINE ST., ST. LOUIS 2, MO.
Plants and Offices in 33 Principal Cities

Maine Potato Fertilizer Recommendations Revised

Seventy-five fertilizer industry representatives and State agricultural workers, meeting for their annual fertilizer conference at the Northeastland Hotel in Presque Isle, heard Dr. G. L. Terman, agronomist of the Maine Agricultural Experiment Station, recommend one new fertilizer ratio for use in producing potatoes on soils testing medium to high in phosphorus and potash, as very often occurs on fields which have been planted to potatoes frequently with heavy fertilization.

The new ratio is a 2–3–3, with a suggested minimum grade of 6–9–9, and with possible higher-analysis grades of 8–12–12 and 10–15–15. One ton per acre of 6–9–9, 1,500 pounds per acre of 8–12–12, or 1,200 pounds per acre of 10–15–15 are the suggested rates of application to furnish 120 pounds per acre of nitrogen and 180 pounds per acre each of phosphoric acid and potash. Correspondingly lower rates were suggested for furnishing 100 pounds per acre of nitrogen.

Two other ratios, the 1–2–2 and the 2–3–4, are continued for other growing conditions in such grades as 5–10–10, 8–16–16, 6–9–12, and 8–12–16.

The revised fertilizer recommendations are based upon some carefully conducted tests in three parts of Aroostook County, under the supervision of Dr. Arthur Hawkins, of the Bureau of Plant Industry, U.S.D.A., who reported on these tests to the conference immediately preceding Dr. Terman's suggested revisions of ratio, grade, and rate usage. A new bulletin on the subject of "Efficient Fertilization of Potatoes in Maine" is understood to be in preparation by the State Extension Service.

Complete Mixed Fertilizer Increases Blueberry Yield

It's "the berries" when a blueberry field yields exactly nothing, but it's literally the berries when 500 pounds per acre of 7–7–7 fertilizer are applied.

When this amount of complete fertilizer was applied to blueberries at the University of New Hampshire in May, 1943, the yield was 81 crates (24 quart size) per acre in 1944, compared with no yield on the adjoining check plot. An apparent residual effect produced a yield of 53 crates per acre in 1945, compared with two on the check plot. Tests were made on fields with three-year-old tops.

"Application of the complete fertilizer," the University report states, "to plants with three-year-old tops lengthened their productive period from three to five years, and possibly six years."

This maintenance of high production for a greater number of years lengthens correspondingly the number of years before it is necessary to burn off old and weakened tops of plants and thus destroy accumulated organic matter. This organic matter is essential for production of top yields.

Increase in yields on fertilizer plots was due to the greater number of berries, for the size of the fruit was not affected by the treatment. From fertilized plots, there was an average of 11 fruits per shoot, while on check plots there was an average of six fruits per shoot. Shoots from plots receiving the fertilizer had a large fruiting area and more blossoms per shoot than did shoots from check plots.

Applications of nitrogen alone did not give the yield response that was obtained from the use of complete mixed fertilizer.

JAITE
HEAVY DUTY MULTI-WALL PAPER BAGS
OFFER DEPENDABLE PROTECTION FOR
YOUR FERTILIZER
THE JAITE COMPANY
"Manufacturers of Paper and Paper Bags"
JAITE, OHIO
"IT'S IN THE J BAG"
SINCE 1905

NOW LION *Nitrogen* SOLUTIONS

HELP YOU INCREASE THE NITROGEN CONTENT OF YOUR MIXED FERTILIZERS *and* *Lower your Costs*

You get these EXTRAS

EXTRA QUALITY

EXTRA NITROGEN

EXTRA PROFITS

Lion Nitrogen Solutions give you the means of using maximum amounts of both ammonia nitrogen and nitrate nitrogen in your mixed fertilizers. Lion Nitrogen Solutions give you more nitrogen per dollar. Properly used, they produce fertilizers that cure rapidly, store well and drill efficiently. That means extra profit for you because Lion Nitrogen Solutions supply in one operation the nitrogen that is usually added separately by several nitrogen carriers.

Write to Lion Oil Company, Chemical Division, El Dorado, Arkansas for complete details today.

LION NITROGEN SOLUTIONS—COMPOSITION

LION SOLUTIONS	AMMONIUM NITRATE %	ANHYDROUS AMMONIA %	NITROGEN CONTENT (%)			
			WATER %	NITRATE %	AMMONIA %	TOTAL
NITROGEN SOLUTION...1	65.0	21.7	13.3	11.38	29.22	40.6
NITROGEN SOLUTION...2	55.5	26.0	18.5	9.71	31.10	40.8
NITROGEN SOLUTION...3	66.8	16.6	16.6	11.69	25.34	37.0

Chemical Division

LION OIL COMPANY

EL DORADO, ARKANSAS

LION

SOILS AND SOIL MANAGEMENT

(Continued from page 9)

the nation's farms tending toward as a result of current fertility practices? Should long-time fertility trends be considered in planning fertilizer use? To what extent will this be profitable to the individual farmer? To the nation as a whole?

TABLE 5.
INFLUENCE OF TILLAGE METHODS ON CORN YIELDS AND RELATIVE NEED FOR FERTILIZATION[1]

Tillage Method	Corn Yields 1942–1945		
	Unfertilized	Fertilized with 300 lb. 0–14–7	Advantage of Fertilizer
1. Plowing followed by disking.....	50 0	53.8	3.8
2. Plowing with sod plow —complete inversion of furrow slice.....	52 9	56 5	3.6
5. Minimum tillage —skimming with broad sweeps or shallow disking.	38.1	47.5	9.4

[1] Data obtained by the Ohio Agricultural Experiment Station at Columbus, Ohio. Rotation consisted of corn, wheat, and an alfalfa-clover-timothy hay mixture.

These questions have only partial answers in the accumulated research data in agriculture. Much remains to be answered by future study. The ultimate objective of agricultural research is to discover methods by which the farms of the country can and will produce the crops the country needs and at the same time maintain or improve the productivity of the soil so that agriculture will be prosperous and permanent.

Changes in fertility have taken place in many soils as a result of long-continued cultivation. These induced changes vary markedly among farms in a given area and among major soil areas. Fertilizer practices, however, have not been the exclusive factors responsible for the fertility changes. In some cases they have had little or no influence; whereas, in other instances they have been entirely responsible for the changes observed.

A much used example of soil fertility depletion is that observed in the Great Plains area. Here, from 10 to 50 per cent of the organic matter is estimated to have been lost as a result of long-continued cultivation. Perhaps such losses are unavoidable and the management practices currently in operation in the area are the only means of economically utilizing this vast area of prairie soils. Nevertheless, the fertility losses are alarming and provoke consideration of possible ways to conserve the fertility of these productive soils.

TABLE 6.
YIELD OF BEETS UNDER VARIOUS SYSTEMS OF CROPPING AT HUNTLEY, MONTANA[1]

	6-Year Periods		
	3rd	4th	5th
	Tons per Acre		
No Fertilizer or Manure			
Continuous beets.....	8.22	7.69	5.06
Two-year rotation, beets and potatoes...	11.49	8.62	6.71
Six-year rotation, potatoes, oats, beets, alfalfa, three years.....	13.49	9.84	5.09
Manure Added			
Two-year rotation, potatoes and beets.....	17.16	17.74	14.22
Six-year rotation, potatoes, oats, beets, alfalfa, three years.....	17.34	16.70	13.33
Manure and Fertilizer Added			
Maximum production rotations (average)..... ...	21.58	22.19	17.98

[1] "Irrigated Crop Rotation," Dan Hansen and A. H. Post. Mont. Agr. Expt. Sta. Bull. No. 414, May, 1943.

Under dry land farming practices in the Great Plains area, soil fertility depletion as a result of direct removal of plant nutrients by crops is not great. The fertility losses have been chiefly through the loss of nitrogen and

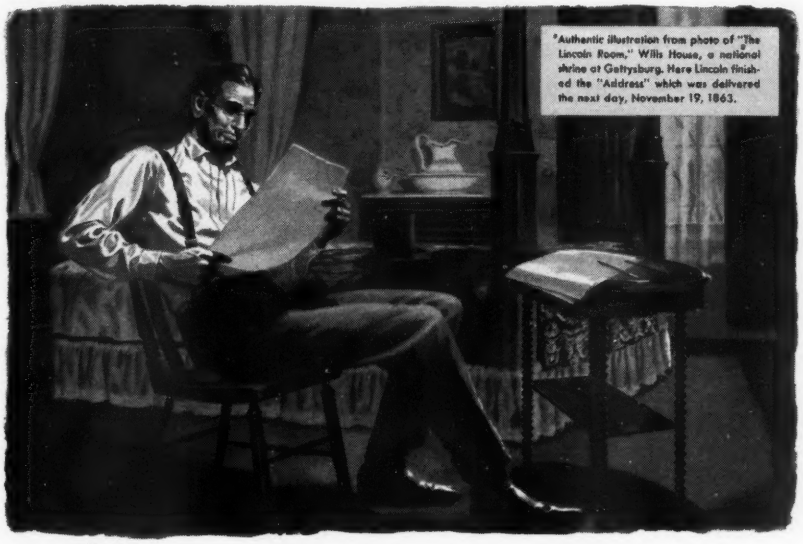
CLASSIFIED ADVERTISEMENTS

WE SUPPLY and place Agronomists, Chemists, Engineers, Branch or Plant Managers, Salesmen, Superintendants. Chemical Department, Position Securing Bureau, Inc., 45 John Street, New York, N.Y. Cortlandt 7-9650

Stedman
FERTILIZER PLANT
EQUIPMENT
Dependable for Fifty Years

All-Steel Self-Contained Fertilizer Mixing Units
Batch Mixers—Dry Batching
Pan Mixers—Wet Mixing
Swing Hammer and Cage Type Tailings Pulverizers
Vibrating Screens
Dust Weigh Hoppers
Acid Weigh Scales

STEDMAN'S FOUNDRY & MACHINE WORKS
AURORA, INDIANA, U. S. A. Founded 1884



*Authentic illustration from photo of "The Lincoln Room," Wills House, a national shrine at Gettysburg. Here Lincoln finished the "Address" which was delivered the next day, November 19, 1863.

16 Years *Before* the Gettysburg Address*... CHASE was manufacturing Better Bags

"Four score and seven years ago..." The Great Emancipator scans it thoughtfully, perhaps skeptically . . . little dreaming that one of the world's most sublime documents is being born.

During this crucial period and years *before,* Chase was manufacturing bags for the storage and shipment of military supplies, seed, equipment and feed—for many uses and frontiers.

And today, Chase is celebrating its Centennial—one hundred years of *experience* in the bag business. We believe that this is important to you because it is your assurance that whatever your bag requirements may be, you can *count* on *Chase* for improved containers for your products.

You'll find your nearby Chase salesman thoroughly informed—and glad to aid you in the solution of your packing problems.

CHECK WITH YOUR CHASE SALESMAN ON THESE PRODUCTS

- OPEN MESH BAGS
- PROTEX BAGS-SEWN, ALSO CEMENTED SEAMS
- TOPMILL BURLAP BAGS
- COTTON BAGS FOR ALL NEEDS
- SPECIALTIES

CHASE 1847-1947 CENTENNIAL

One Hundred Years of Experience in Making Better Bags for Industry and Agriculture.

FOR BETTER BAGS... BETTER BUY CHASE

CHASE BAG CO. GENERAL SALES OFFICES, 309 WEST JACKSON BLVD., CHICAGO 6, ILL.

BOISE • BUFFALO • CHAGRIN FALLS, O. • CLEVELAND • CROSSETT, ARK. • DALLAS • DENVER • DETROIT • GOSHEN, IND. HARLINGEN, TEXAS • HUTCHINSON, KAN. • KANSAS CITY • MEMPHIS • MILWAUKEE • MINNEAPOLIS • NEW ORLEANS • NEW YORK OKLAHOMA CITY • ORLANDO, FLA. • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • REIDSVILLE, N.C. • ST. LOUIS • SALT LAKE CITY • TOLEDO

organic matter. Water is yet the chief limiting factor in crop production and may continue to be so for some time to come even at the present rate of fertility depletion.

When waetr is supplied by irrigation in the Great Plains area and the farming practices become more intensive, the picture is quite different. Under these latter conditions fertility depletion has, in some instances, become limiting to crop yields. This is shown by the sugar beet yield data from Huntley, Montana, in Table 6. Here, the beet yields have declined in recent years when no manure or fertilizer has been applied. These yield reductions have been accentuated where crops like alfalfa occur in the rotation. The application of manure has served to maintain the beet yields. Where both manure and fertilizer were applied, the general level of yields was increased and maintained at the high level.

The Great Plains area is not an isolated example of soil fertility depletion. Such fertility losses are found widespread in the country. Results from Ohio[4] indicate approximately 35 per cent of the organic matter and nitrogen has been lost from the cultivated soils. Here, such fertility losses are reflected in the productivity of the soils and a proper fertilizer program might contribute markedly to conservation and improvement of soil fertility.

The trends in fertility have not all been downward. Much more phosphorus is applied to the soil in some States than is removed by crops.[5] The relative balance between application and removal in 1943 is shown for the various States in Fig. 2. Because of low phosphorus content in the soils and a marked tendency toward fixation, these high applications may not, in many cases, have materially increased the available phosphorus in the soil. Where heavy rates of application have been repeated annually for long periods of time, however, the available phosphorus in many soils has been increased. A recent study[6] of the fertility status of potato soils in the Atlantic seaboard states presents evidence in support of this fact. The survey showed that there has been a marked accumulation of readily soluble phosphorus in all soils studied. Some potash accumulations were found as a result of heavy fertilization. This accumulation, however, was relatively small as compared with the total amount of potash applied over a period of years.

It is to be expected that a sound fertilizer program for the future will take account of both the declining fertility of soils such as those in the Midwest and the accumulation of nutrients in soils such as those in the potato study referred to above. In fact, fertilizer usage is now increasing rapidly in the Midwest.

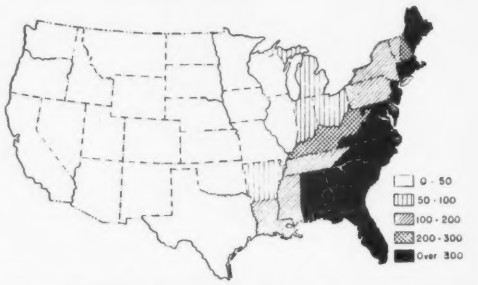


Fig. 2 Phosphoric Acid Applied in Fertilizers as Percentage of that Removed in Crops Harvested in 1943.

The fertilizer consumption in the north central region was 877 thousand tons in 1938. The consumption had increased to 2,000 thousand tons in 1944 and to 2,364 thousand tons in 1945. Part of this expansion in the use of fertilizer results from higher levels of farm income and may be expected to fluctuate with changing price levels. The general trends in fertilizer use, however, will be found to be upward when proper allowance is made for price influences.

The high rates of fertilization applied to potato soils in the Atlantic seaboard States

[4] R. M. Salter, R. D. Lewis, and J. A. Slipher. 1938. "Our Heritage—The Soil." Bull. No. 175, Agr. Ext. Serv., Ohio State University.

[5] R. W. Cummings. 1945. "Nutrient Status of Soils in Commercial Potato Producing Areas of the Atlantic and Gulf Coasts." I. "Background and Organization of the Study." Soil Sci. Soc. Am. Proc. 10:240–244.

[6] Michael Peech. 1945. "Nutrient Status of Soils in Commercial Potato Producing Areas of the Atlantic and Gulf Coasts." II. "Chemical Data on Soils." Soil Sci. Soc. Am. Proc. 10: 245–251.

SOUTHERN STATES PHOSPHATE and FERTILIZER COMPANY
SAVANNAH, GEORGIA
Manufacturers of
SULPHURIC ACID, SUPERPHOSPHATE, COMPLETE FERTILIZERS
and ALL TYPES OF BASE GOODS
IMPORTERS AND EXPORTERS

Be

Better Packaging *costs less*

with a St. Regis Packaging System

Check the savings you can make with a St. Regis Packaging System and you'll see why progressive fertilizer producers use this modern, streamlined, low-cost method. Here's a quick summary:

- **The St. Regis 160-FB packer fills and weighs 12 to 16 bags per minute on a straight run of a single grade of fertilizer.**
- **Only one operator is needed for each packing machine. Labor costs are cut.**
- **No bag closing equipment is necessary. Bags are filled through a valve in one corner. The valve closes automatically when bags are discharged from the packer.**
- **Multiwalls keep fertilizer dry and free-flowing when special bag construction is used... win ready acceptance from customers and dealers.**
- **Multiwalls are easy to handle, clean and sift-proof.**

For complete details on this high-speed, low-cost packaging method, call or write the nearest St. Regis office.

ST. REGIS SALES CORPORATION
SALES SUBSIDIARY OF ST REGIS PAPER COMPANY

NEW YORK 17: 230 Park Avenue • CHICAGO 1: 230 North Michigan Avenue • BALTIMORE 2: 1925 O'Sullivan Building
SAN FRANCISCO 4: 1 Montgomery Street • ALLENTOWN, PA.: 842 Hamilton Street • Offices in Other Principal Cities—
IN CANADA: ST REGIS PAPER CO (CAN.) LTD MONTREAL • HAMILTON • VANCOUVER

and the attendant accumulation of plant nutrients may result in a reduction in the amount of some fertilizer materials applied in the future to potato soils. Field studies on the potato soils in Maine and North Carolina in 1945 and 1946 show that, where plant nutrients have accumulated to high levels as a result of a long-continued practice of applying high rates of fertilizer, economic yield responses can no longer be expected to result from large applications of fertilizer. The accumulation of plant nutrients in the soil has not eliminated the need to apply fertilizer. It has merely reduced the rate of application necessary to obtain maximum yields. The average fertilizer application for a long period of time to potato soils in Maine has been about 80–100 pounds per acre of N, 160 to 200 pounds of P_2O_5, and 200 to 240 pounds of K_2O. During the last 10 years the application rates have been somewhat higher. Experimental results carried on in representative areas in Aroostook County indicate that where plant nutrients have accumulated to high levels maximum yields can be expected by adding 100–120 pounds of N per acre, 120-160 pounds of P_2O_5, and 100–180 pounds of K_2O. This is a substantial reduction in the rate of application of phosphorus and potassium.

Tennessee Farmer Sets High Mark in Potato Race

Martin Heidel, Morgan County, Tenn., farmer has set a fast pace for the 300-bushel Irish potato club this year by producing an average of 489 bushels per acre on three and a half acres. Heidel's yield, which sets a new record for Morgan County, was the first officially checked this year, according to Assistant County Agent C. R. Jansch.

Irish potatoes are part of a regular rotation on this field, Jansch says. Last year corn and cover crops were produced; and for three years previously hay and pasture crops occupied the field, to which it will be returned this fall.

As a part of his yearly fertilizer program, Heidel applied to the field 2,200 pounds of 3–9–6 fertilizer and five tons manure before planting Irish potatoes. Rate of planting was 17½ bushels per acre. From the yield of 489 bushels per acre, 434 bushels graded U. S. No. 1.

Corn Yield of 200 Bushels Expected

A small group of agricultural workers and industry men, led by E. D. Alexander and J. B. Preston, extension agronomists, participated in the North Georgia tour of corn and pasture demonstrations from August 11th to 15th. Many local farmers also visited the demonstrations in Carroll and Gordon Counties and were asked to estimate yields where good cultural practices including the use of adapted seed and fertilizer had been followed. Particularly interesting was the field of H. A. Satterfield, Union County, where Tennessee No. 10 hybrid corn at the rate of 20,000 stalks per acre and 1 ton of 4–8–6 fertilizer plus 200 pounds of ammonium nitrate were used. Estimated yields ran as high as 200 bushels per acre. The Georgia Mountain Branch Experiment Station at Blairsville, in charge of J. E. Bailey, was also visited, and the pasture seeding mixtures were described by L. O. Brooks.

St. Regis Opens Minneapolis Office

V. C. Douglas, vice-president of the St. Regis Sales Corporation, Chicago, has announced the opening of a multi-wall paper bag sales office in Minneapolis to service industry in that territory.

The Minneapolis office is located at 2013 Foshay Tower, and is under the supervision of Harry A. Hughes. This office, operating within the Central Sales District, which has its headquarters in Chicago, brings to twenty-three the number of offices that St. Regis maintains throughout the country for the sale of heavy duty paper bags to the rock products, food, feed, chemical, and fertilizer industries.

L. W. HUBER COMPANY
LEAD ARSENATE
Available for immediate shipment
Room 903
170 BROADWAY
NEW YORK 7, N. Y.

A Complete Service

THE strategic factory locations of The American Agricultural Chemical Company, as shown on the accompanying map, assure prompt, dependable service for the complete line of products listed below.

We manufacture all grades of Commercial Fertilizers, Superphosphate, Agrinite Tankage, Bone Black, Bone Black Pigments (Cosmic Black), Bone Ash, Bone Oil, Dicalcium Phosphate, Monocalcium Phosphate, Gelatin, Agricultural Insecticides (including Pyrox, Arsenate of Lead, Calcium Arsenate, etc.), Trisodium and Disodium Phosphate, Phosphorus, Phosphoric Acid, Sulphuric Acid, Ammonium Carbonate, Ammonium Fluosilicate, Magnesium Fluosilicate, Potassium Fluosilicate, Phosphorus Pentasulphide, Phosphorus Sesquisulphide (lump), Zinc Fluosilicate, Salt Cake; and we are importers and/or dealers in Nitrate of Soda, Cyanamid, Potash Salts, Sulphate of Ammonia, Raw Bone Meal, Steamed Bone Meal, Sheep and Goat Manure, Fish and Blood. We mine and sell all grades of Florida Pebble Phosphate Rock.

FACTORIES

Alexandria, Va.
Baltimore, Md.
Buffalo, N. Y.
Carteret, N. J.
Cayce, S. C.
Chambly Canton, Quebec, Can.
Charleston, S. C.
Cincinnati, Ohio
Cleveland, Ohio
Detroit, Mich.
Greensboro, N. C.
Havana, Cuba
Henderson, N. C.
Montgomery, Ala.
Nat. Stockyards, Ill.
Norfolk, Va.
No. Weymouth, Mass
Pensacola, Fla.
Pierce, Fla.
Port Hope, Ont., Can
Savannah, Ga.
Searsport, Maine
South Amboy, N. J
Spartanburg, S. C.
Wilmington, N. C

The AMERICAN AGRICULTURAL CHEMICAL Co.

50 Church Street, New York 7, N. Y.

SALES OFFICES

Alexandria, Va.
Baltimore, Md.
Buffalo, N. Y.
Carteret, N. J.
Charleston, S. C.
Cincinnati, Ohio
Cleveland, Ohio
Columbia, S. C.
Detroit, Mich.
Greensboro, N. C.
Havana, Cuba
Henderson, N. C.
Houlton, Me.
Laurel, Miss.
Montgomery, Ala.
Montreal, Quebec, Can.
National Stockyards, Ill.
New York, N. Y.
Norfolk, Va.
No. Weymouth, Mass.
Pensacola, Fla.
Pierce, Fla.
Port Hope, Ont., Can
Savannah, Ga.
Spartanburg, S. C.
Wilmington, N. C

Keyed SERVICE!

Fertilizer plants all over the country—large and small—state their needs and we meet them. Large stocks of seasoned materials and ample modern production facilities enable us to make prompt shipments.

TRIPLE SUPERPHOSPHATE

46 to 48% Available Phosphoric Acid

•

We also manufacture

HIGH-GRADE SUPERPHOSPHATE

•

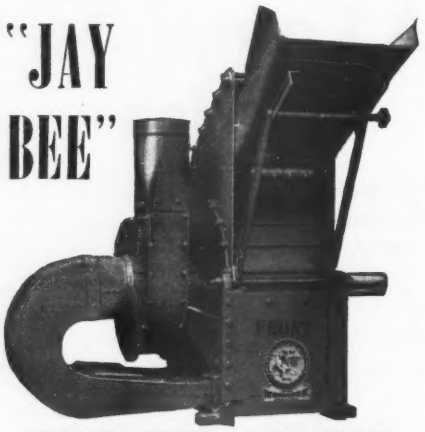
U. S. Phosphoric Products
Division
TENNESSEE CORPORATION
Tampa, Florida

New York Office:
61 Broadway
Washington, D. C.
440 The Woodward Bldg.

Sales Agents:
Bradley & Baker
155 East 44th St
New York, N. Y.

A Mark of FLORIDA TRIPLE SUPER PHOSPHATE *Reliability*

"JAY BEE"



FERTILIZER GRINDER

"Jay Bee" grinds every grindable fertilizer ingredient coarse or fine, cool and uniform.

All steel construction—heavy cast iron base. Practically indestructible. Biggest capacity for H.P. used. Handles products with up to 14% grease—30% moisture. Delivers finished products to storage bins without screens or elevators. Sizes and styles from 20 H.P. to 200 H.P. to meet every grinding requirement.

Write for complete details. Please state your grinding requirements.

J. B. SEDBERRY, INC.
Franklin, Tenn.

For a Better Insecticide Business

Investigate the

McLAUGHLIN GORMLEY KING

FRANCHISE PLAN

If the manufacture and sale of agricultural insecticides would fit in naturally with your present business . . . If you are a reliable, progressive and alert company . . . If you are interested in making a permanent and profitable addition to your present lines . . . Send for full information about The M. G. K. Franchise Plan featuring the nationally advertised Pyrocide* Dust and Multicide* (DDT) Dusts and Sprays.

McLaughlin Gormley King Co. ☆
Minneapolis, Minnesota

*Name*_____

*Address*_____

*City*_____ *State*_____

*TRADE MARKS REG U S PAT OFF

ALEX. M. McIVER & SON

BROKERS

Specializing
SULPHURIC ACID

Nitrogenous Materials
Blood and Fertilizer Tankage
Phosphate Rock
Bone Meals
Dolomitic Lime
(42—44% Magnesium Carbonate)
Bags
Soya Meal and Cottonseed Meal
Ammoniated Base and Super

SOUTH AMERICAN DRY RENDERED TANKAGE

PEOPLES OFFICE BUILDING
Charleston, S. C.

BUYERS' GUIDE • A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"

AMMONIA—Anhydrous and Liquor
Commercial Solvents Corp., New York City
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM NITRATE
Lion Oil Company, El Dorado, Ark.
Spencer Chemical Co., Kansas City, Mo.

BAG MANUFACTURERS—Burlap
Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Mente & Co., Inc., New Orleans, La.
Virginia-Carolina Chemical Corp., Richmond, Va

BAG MANUFACTURERS—Cotton
Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Mente & Co., Inc., New Orleans, La.
Virginia-Carolina Chemical Corp., Richmond, Va

BAG MANUFACTURERS—Paper
Bagpak, Inc., New York City.
Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Hammond Bag & Paper Co., Welisburg, W. Va
Jaite Company, The, Jaite, Ohio
Raymond Bag Co., Middletown, Ohio.
St. Regis Paper Co., New York City.

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Huber & Company, New York City.
McIver & Son, Alex. M., Charleston, S. C.

BAG CLOSING MACHINES
St. Regis Paper Co., New York City.
Union Special Machine Co., Chicago, Ill

BAG PRINTING MACHINES
Schmutz Mfg. Co., Louisville, Ky.

BAGGING MACHINES—For Filling Sacks
Exact Weight Scale Co., Columbus, Ohio
St. Regis Paper Co., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md
Sturtevant Mill Company, Boston, Mass.
Utility Works, The, East Point, Ga.

BONE BLACK
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Huber & Company, New York City.

BONE PRODUCTS
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

BORAX AND BORIC ACID
American Potash and Chem. Corp., New York City.

BROKERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

BUCKETS—For Hoists, Cranes, etc.
Hayward Company, The, New York City.

BUCKETS—Elevator
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CARS AND CARTS
Hough Co., The Frank G., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Utility Works, The, East Point, Ga.

CHEMICALS
American Agricultural Chemical Co., New York City
American Cyanamid Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Commercial Solvents Corp., New York City
Huber & Company, New York City.
International Minerals & Chemical Corporation, Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Spencer Chemical Co., Kansas City, Mo.
Virginia-Carolina Chemical Corp., Richmond, Va

CHEMISTS AND ASSAYERS
Gascoyne & Co., Baltimore, Md.
Shuey & Company, Inc., Savannah, Ga
Wiley & Company, Baltimore, Md.

CONDITIONERS
American Limestone Co., Knoxville, Tenn.
Keim, Samuel D., Philadelphia, Pa.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
McIver & Son, Alex. M., Charleston, S. C
Schmaltz, Jos. H., Chicago, Ill.

CYANAMID
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.

DRYERS
Sackett & Sons Co., The A. J., Baltimore, Md.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind
Sturtevant Mill Company, Boston, Mass.
Titlestad Corporation, Nicolay, New York City

FERTILIZER (Mixed) MANUFACTURERS
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
International Minerals and Chemical Corporation, Chicago, Ill.
Southern States Phosphate & Fertilizer Co., Savannah, Ga.
Virginia-Carolina Chemical Corp., Richmond, Va.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
McIver & Son, Alex. M., Charleston, S. C.

FOUNDERS AND MACHINISTS
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Utility Works, The, East Point, Ga.

A Classified Index to Advertisers in "The American Fertilizer"

BUYERS' GUIDE

For an Alphabetical List of all the Advertisers, see page 33

HOPPERS
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Utility Works, The, East Point, Ga.

IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, New York City.
Southern States Phosphate & Fertilizer Co., Savannah, Ga.

INSECTICIDES
American Agricultural Chemical Co., New York City.
McLaughlin Gormley King Co., Minneapolis, Minn.

LIMESTONE
American Agricultural Chemical Co., New York City
American Limestone Co., Knoxville, Tenn.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, New York City.
Longview-Saginaw Lime Works, Inc.., Birmingham, Ala.
McIver & Son, Alex. M.. Charleston, S. C.

LOADERS—Car and Wagon
Hough Co., The Frank G., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Acid Making and Handling
Chemical Construction Corp., New York City.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Utility Works, The, East Point, Ga.

MACHINERY—Ammoniating
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Company, Boston ,Mass

MACHINERY—Elevating and Conveying
Hough Co., The Frank G., Libertyville, Ill.
Hayward Company, The, New York City.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind
Sturtevant Mill Company, Boston, Mass.
Utility Works, The, East Point, Ga.

MACHINERY—Grinding and Pulverizing
Bradley Pulverizer Co., Allentown, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Sedberry, Inc. J. B., Franklin, Tenn.
Stedman's Foundry and Mach. Works, Aurora, Ind
Sturtevant Mill Company, Boston, Mass.
Utility Works, The, East Point, Ga.

MACHINERY—Material Handling
Hayward Company, The, New York City.
Hough Co., The Frank G., Libertyville, Ill.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Utility Works, The, East Point, Ga.

MACHINERY—Mixing, Screening and Bagging
Exact Weight Scale Co., Columbus, Ohio
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Utility Works, The, East Point, Ga.

MACHINERY—Power Transmission
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind

MACHINERY—Superphosphate Manufacturing
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Utility Works, The, East Point, Ga.

MANGANESE SULPHATE
McIver & Son, Alex. M., Charleston, S. C.

MIXERS
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind
Sturtevant MillCompany, Boston, Mass.
Utility Works, The, East Point, Ga.

NITRATE OF SODA
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, New York City.
Huber & Company, New York City.
International Minerals & Chemical Corporation, Chicago, Ill
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

NITROGEN SOLUTIONS
DuPont du Nemours & Co., Wilmington, Del.
Lion Oil Company, El Dorado, Ark.
Spencer Chemical Co., Kansas City, Mo.

NITROGENOUS ORGANIC MATERIAL
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Minerals & Chemical Corporation, Chicago, Ill
McIver & Son, Alex. M., Charleston, S. C.

NOZZLES—Spray
Monarch Mfg. Works, Philadelphia, Pa.

PHOSPHATE ROCK
American Agricultural Chemical Co. New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Minerals & Chemical Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Ruhm, H. D., Mount Pleasant, Tenn.
Schmaltz, Jos. H., Chicago, Ill.
Virginia-Carolina Chemical Corp., Richmond, Vc.

PLANT CONSTRUCTION—Fertilizer and Acid
Chemical Construction Corp., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Titlestad Corporation, Nicolay, New York City
Utility Works, The, East Point, Ga.

POTASH SALTS—Dealers and Brokers
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Minerals & Chemical Corporation, Chicago, Ill
Schmaltz, Jos. H., Chicago, Ill.

POTASH SALTS—Manufacturers
American Potash and Chem. Corp., New York City.
Potash Co. of America, New York City.
International Minerals & Chemical Corp., Chicago, Ill.
United States Potash Co., New York City.

PRINTING PRESSES—Bag
Schmutz Mfg. Co., Louisville, Ky.

PYRITES—Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.

REPAIR PARTS AND CASTINGS
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Utility Works, The, East Point, Ga.

SCALES—Including Automatic Bagging
Exact Weight Scale Co., Columbus, Ohio
Sackett & Sons Co., The A. J., Baltimore, Md.

BUYERS' GUIDE

Stedman's Foundry and Mach. Works, Aurora, Ind.
Utility Works, The, East Point, Ga.

SCREENS
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Utility Works, The, East Point, Ga.

SEPARATORS—Air
Sackett & Sons Co., The A. J., Baltimore, Md.

SPRAYS—Acid Chambers
Monarch Mfg. Works, Inc., Philadelphia, Pa.

SULPHATE OF AMMONIA
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Hydrocarbon Products Co., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

SULPHUR
Ashcraft-Wilkinson Co., Atlanta, Ga.
Texas Gulf Sulphur Co., New York City.

SULPHURIC ACID
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Minerals & Chemical Corporation, Chicago, Ill.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
McIver & Son, Alex. M., Charleston, S. C.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

SUPERPHOSPHATE
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Minerals & Chemical Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

SUPERPHOSPHATE—Concentrated
Armour Fertilizer Works, Atlanta, Ga.
International Minerals & Chemical Corporation, Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

TANKAGE
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
International Minerals & Chemical Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

VALVES
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Utility Works, The, East Point, Ga.

Alphabetical List of Advertisers

American Agricultural Chemical Co., New York City....29
American Limestone Co., Knoxville, Tenn....14
American Potash and Chemical Corp., New York City....3
Armour Fertilizer Works, Atlanta, Ga....—
Ashcraft-Wilkinson Co., Atlanta, Ga....Front Cover
Bagpak, Inc., New York City....16
Baker & Bro., H. J., New York City....—
Bemis Bro. Bag Co., St. Louis, Mo....21
Bradley Pulverizer Co., Allentown, Pa....—
Chase Bag Co., Chicago, Ill....25
Chemical Construction Corp., New York City....—
Fulton Bag & Cotton Mills, Atlanta, Ga....6
Gascoyne & Co., Inc., Baltimore, Md....34
Hammond Bag & Paper Co., Wellsburg, W. Va....—
Hayward Company, The, New York City....34
Hough Co., The Frank G., Libertyville, Ill....—
Huber Co., L. W., New York City....28
International Minerals & Chemical Corporation, Chicago, Ill....Back Cover
Jaite Company, The, Jaite, Ohio....22
Keim, Samuel D., Philadelphia, Pa....33
Lion Oil Company, El Dorado, Ark....23
Link-Belt Co., Chicago, Ill....20
Longview-Saginaw Lime Works, Birmingham Ala....—
McIver & Son, Alex. M., Charleston, S. C....30
McLaughlin Gormley King Co., Minneapolis, Minn....30
Mente & Co., Inc., New Orleans, La....4
Monarch Mfg. Works, Inc., Philadelphia, Pa....34
Potash Co. of America, New York City....3rd Cover
Raymond Bag Co., Middletown, Ohio....15
Ruhm, H. D., Columbia, Tenn....34
Sackett & Sons Co., The A. J., Baltimore, Md....—
Schmaltz, Jos. H., Chicago, Ill....34
Schmutz Mfg. Co., Louisville, Ky....5
Sedberry, Inc., J. B., Franklin, Tenn....30
Shuey & Company, Inc., Savannah, Ga....34
Southern States Phosphate & Fertilizer Co., Savannah, Ga....26
Spencer Chemical Co., Kansas City, Mo....2nd Cover
Stedman's Foundry and Machine Works, Aurora, Ind....24
St. Regis Paper Co., New York City....27
Sturtevant Mill Co., Boston, Mass....—
Texas Gulf Sulphur Co., New York City....17
Titlestad Corporation, Nicolay, New York City....18
Union Special Machine Co., Chicago, Ill....—
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla....30
United States Potash Co., New York City....19
Utility Works, The, East Point, Ga....—
Virginia-Carolina Chemical Corp., Richmond, Va....—
Wiley & Company, Inc., Baltimore, Md....34

FEEDING AND FERTILIZER MATERIALS

(SINCE 1898)

SAMUEL D. KEIM
1343 ARCH STREET
PHILADELPHIA 7, PA.

MONARCH SPRAYS

This is our Fig. 645 Nozzle. Used for Scrubbing Acid Phosphate Gases. Made for "full" or "hollow" cone in Brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and

Stoneware Chamber Sprays

now used by nearly all chamber spray sulphuric acid plants.

CATALOG 6-C

MONARCH MFG. WORKS, INC.
Westmoreland and Emery Sts., Philadelphia, Pa.

HAYWARD BUCKETS

Use this Hayward Class "K" Clam Shell for severe superphosphate digging and handling.

THE HAYWARD CO., 202 Fulton St., New York

GASCOYNE & CO., INC.

Established 1887

Chemists and Assayers

Public Weighers and Samplers

27 South Gay Street - BALTIMORE, MD.

SHUEY & COMPANY, Inc.

Specialty: Analysis of Fertilizer Materials and Phosphate Rock. Official Chemists for Florida Hard Rock Phosphate Export Association. Official Weigher and Sampler for the National Cottonseed Products Association at Savannah; also Official Chemists for National Cottonseed Products Association

115 E. BAYSTREET, SAVANNAH, GA.

H. D. RUHM

Phosphate Consultant

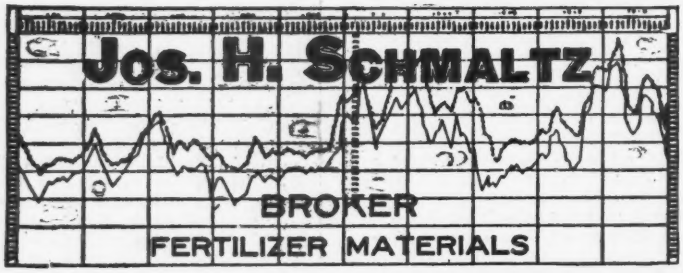
305 W. 7th Street
COLUMBIA TENNESSEE

WILEY & COMPANY, Inc.

Analytical and Consulting Chemists

BALTIMORE 2, MD.

Tankage
Blood
Bone
All
Ammoniates



327
South
La Salle
Street
CHICAGO

Dictionary of Fertilizer Materials and Terms

A new revised edition containing complete descriptions and analyses, together with A. O. A. C. official definitions, of all plant foods and materials used in the manufacture of chemical fertilizers.

The new edition is enlarged in content and size—6 x 9 inches. As a reference booklet for all who are interested in the manufacture or use of chemical fertilizers, the dictionary will prove invaluable. For the agricultural chemist as well as the fertilizer salesman, it will serve as an authoritative source of information that will give quick and accurate answers to questions that arise daily.

PRICE **$1.00** *postpaid*

WARE BROS. COMPANY 1900 CHESTNUT STREET PHILADELPHIA 3, PA.

GENE

Quality and Service

You are assured on two important points—even in today's abnormal market—when you deal with P. C. A.

1. Quality . . . our Red Indian products are of unquestioned excellence.
2. Service . . . we make every effort to give you the service you want and deserve.

When better service is possible be assured P. C. A. will give it. Meanwhile your confidence, and your patience are greatly appreciated.

POTASH COMPANY OF AMERICA

CARLSBAD, NEW MEXICO

GENERAL SALES OFFICE . . 50 Broadway, New York, N. Y. • MIDWESTERN SALES OFFICE . . First National Bank Bldg., Peoria, Ill.
SOUTHERN SALES OFFICE . . Candler Building, Atlanta, Ga.

MEET THE RAPIDLY INCREASING DEMAND FOR SOLUBLE MAGNESIA IN FERTILIZERS

Sul-Po-Mag

Water-Soluble Sulphate of Magnesia

Earlier maturity, higher yields, improved quality crops and increased acre values are being obtained by a rapidly increasing number of farmers with a combination of soluble-magnesia and potash added to the other plant foods in their fertilizers.

You can supply soluble magnesia in the most practical, economical and successful form by using Sul-Po-Mag in your fertilizer mixtures or for direct application.

Sul-Po-Mag fortunately contains *both* magnesium and potash in a properly balanced mixture formed by Nature herself. Both these essential plant food ingredients are in water-soluble form and are immediately available to crops.

International is producing Sul-Po-Mag at its Carlsbad, New Mexico, mines in larger quantities than ever before. Many fertilizer manufacturers have found by experience that this natural combination is the ideal way to satisfy the growing market demand for quality plant foods containing soluble magnesia.

MURIATE OF POTASH · SULPHATE OF POTASH
SUL-PO-MAG (Water-Soluble Sulphate of Potash-Magnesia) Sul-Po-Mag Trademark U. S. Pat. Off.

POTASH DIVISION

International

MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

Sales Offices: 61 Broadway, New York 6, N. Y.; Chicago 6; Volunteer Bldg., Atlanta 3, Ga.